



Using reproductive life plan-based information in a primary health care center increased Iranian women's knowledge of fertility, but not their future fertility plan: A randomized, controlled trial

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ABSTRACT

Objectives: Reproductive Life Plan (RLP)-based information in counseling has been reported in the USA and Sweden to increase women's knowledge of fertility and informed decision making about future fertility plans. This study examined if utilizing the RLP tool would have the same impact on Iranian women. **Design:** A randomized, three-armed, controlled trial. 181 women were randomly allocated to the intervention group (IG, $n=61$), control group 1 (CG1, $n=60$) or control group 2 (CG2, $n=60$).

Setting: A primary health care center in the Sari city, the Provincial capital of Mazandaran, Iran.

Participants: Women of reproductive age who were able to conceive.

Interventions: The intervention group received oral and written information about fertility based on the RLP tool. Participants were contacted 2 months after the intervention. The primary outcome measure was the change in women's knowledge of fertility, particularly folic acid intake prior to pregnancy, over a 2 month period. The change in women's family planning intentions were also assessed. The participants in the IG shared their experiences at follow-up.

Findings: At baseline, there was no difference between the groups regarding the mean knowledge of fertility score. At 2 months, after adjustment for age, history of pregnancy and baseline values, the between group difference in change from baseline was 5.8 ($p < 0.001$). While there was no significant difference between the IG and CG1 for folic acid intake prior to pregnancy at baseline, the group difference for folic acid intake prior to pregnancy post intervention was statistically significant (85% vs 25%, $p < 0.001$). At follow-up, women's desire to have more children, preferred age to conceive the last child and the desired age gap between children in the IG and CG1 did not significantly change over time. Women reported the RLP counseling tool used by midwives as useful.

Key conclusions: Provision of RLP-based information for Iranian women with a clear pregnancy intention in the context of a stable relationship, increased knowledge of fertility without changing their future fertility plan. The RLP counseling tool was appreciated by study participants. The lack of improvement in women's fertility intentions over time may reflect the involvement of other factors influencing decision making about childbearing in Iran. Whether the RLP can change women's behavior is yet to be established.

Implications for practice: The RLP can be used by health care professionals, especially midwives, as a tool to increase women's fertility knowledge, which may result in fertility behavior change.

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Introduction

The American College of Obstetricians and Gynecologists (ACOG) recommends all women and men have a reproductive life plan (RLP) based on personal values and resources to guide timing

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and spacing of desired children. (ACOG Committee Opinion on Gynecologic Practice, 2005; Johnson et al., 2006; Moos et al., 2008). Planning for childbearing well before pregnancy may decrease the incidence of unintended pregnancy, encourage individuals to address unhealthy behaviors before conception and lessen adverse pregnancy outcomes (Files et al., 2011; Johnson et al., 2006). It also enables promotion of health behaviors such as intake of folic acid which decreases the risk of fetal neural tube defects up to 75% if taken before conception (MRC VITAMIN STUDY RESEARCH GROUP, 1991).

Despite parenthood being an important part of life for most individuals, it is not unusual for people to postpone childbearing until educational goals and economic stability has been achieved which may result in subsequent involuntary childlessness (Bellieni, 2016; Peterson et al., 2012).

Economic uncertainty, fading long-held cultural belief of early marriage and conception, education and employment and financial uncertainty were common reasons Iranian women reported for delaying childbearing (Abbasi-Shavazi et al., 2009). This trend in recent years has been reflected in the country's total annual population growth rate, and total fertility rate (TFR) [the average number of children per woman] of 1.2% and 1.6%, in 2017, respectively (Statistical Center of Iran, 2017). According to the United Nations, the TFR for Iran during 2010–2015 of 1.75 births per woman (United Nations Population Division, 2017) is below the replacement level of 2.1 for the country (United Nations Population Divisions, 2017). With the mean age of mothers at birth of first child of 27 years and the current interval between first and second child of more than 5 years (Eslami, 2016), Iranian women may miss the ideal window of childbearing. A recent review reported the prevalence of unwanted pregnancy in Iran at 30.6% (95% CI, 28.1–33.1) with 63% of women reported using either no method or the withdrawal method before experiencing an unwanted pregnancy (Moosazadeh et al., 2014). There are 150,000–350,000 cases of illegal abortion each year (Iran's Ministry of Health and Medical Education, 2014). Given that induced abortion is illegal in Iran, it is possible that abortion may be higher due to unrecorded abortion documentation.

Several studies reported that there is insufficient knowledge of fertility, an overestimation of the age of decline in female fertility and IVF success rate. (Chan et al., 2015; Hashiloni-Dolev et al., 2011; Lampic et al., 2006a; Lampic et al., 2006b; Lucas et al., 2015; Maheshwari et al., 2008; Peterson et al., 2012; Rovei et al., 2010; Virtala et al., 2011; Vujčić et al., 2017). There is also a large body of evidence that reports there is insufficient understanding of the importance of improving women's knowledge of fertility using education programs to optimize fertility rates (Chan et al., 2015; Hashiloni-Dolev et al., 2011; Lampic et al., 2006a; Lampic et al., 2006b; Lucas et al., 2015; Maheshwari et al., 2008; Peterson et al., 2012; Rovei et al., 2010; Stern et al., 2013; Virtala et al., 2011; Vujčić et al., 2017).

To assist women and couples in making deliberate and informed decisions about their future conception, the Center for Control Diseases (CDC) recommended a simple, practical and client-centered tool, the RLP (Johnson et al., 2006). The tool aims to help clients, in a non-directive way, to find strategies which best work within their personal goals and preferences (Moos et al., 2008). The RLP tool is also useful to clinicians, especially midwives, in different primary health care settings. It contains a set of non-normative questions regarding individuals' intentions for fertility (Moos, 2003) with follow-up care tailored to the client's responses to the RLP questions (Moos, 2003).

The RLP has been evaluated in Sweden and the USA using the RLP-based information in contraceptive counseling of university students and in women with active chronic diseases resulted in increasing women's knowledge of fertility and their reproductive

future (Bello et al., 2013; Mittal et al., 2014; Stern et al., 2013). Using a pre-collected data at a publicly funded clinic in the USA, Bommaraju et al. (2015) examined the effect of RLP sessions on using more effective contraceptive methods and reported RLP did not encourage women to use effective contraceptive use.

To our knowledge, the RLP tool is not used in Iran, as it is a conservative Muslim country with a different sociodemographic and cultural context when compared to Western countries. We undertook this study to examine the change in women's knowledge of fertility, particularly folic acid intake, prior to pregnancy, after implementing a RLP-information counseling service. Secondary outcomes included women's family planning intentions and their confidence in having their desired number of children.

Materials and Methods

Participants and setting

Women were eligible if they were of reproductive age and were able to understand the Persian language.

Women were excluded if they were pregnant; had a previous hysterectomy, endometrial ablation or tubal ligation; or reported that their husband had a vasectomy.

We recruited women from an urban, government-funded primary health center (PHC) located in the Sari city, the provincial capital of Mazandaran, Northern Iran. The center provides primary health care service, free of charge, to 6280 local households. The tasks performed by the maternal and child section of an urban PHC in Iran include perinatal and postnatal care, care of children under five and school-aged children, and family planning which are usually delivered by a midwife. In this study, all women who came to the maternal and child care section to receive preconception care, postnatal care, family planning, immunization, and care for children under five were invited to participate in the study.

Study design and intervention

This three-armed, randomized, controlled, parallel group trial was inspired by a published Swedish study (Stern et al., 2013).

A trained Master student in Counseling in Midwifery invited women to participate in this study. Women were informed that participation was voluntary and they could decline without consequence for their future health care. Women who met the inclusion criteria and were willing to participate were randomly assigned, in a 1:1:1 ratio, to either the intervention group (IG, $n = 61$), or one of two control groups (CG1, $n = 60$, CG2, $n = 62$).

Participants in the IG and CG1 were asked to complete a baseline questionnaire before the intervention took place. To test the effect of questionnaire on enhancing women's knowledge, women in the CG2 were not required to fill the baseline study questionnaire.

The general staff members provided the standard care for which women came to the center. This included preconception health care, perinatal care, immunization, well-child visits, well-women visits, Pap smear testing and family planning. In addition, the intervention group received a 5 to 10-minute counseling session with Maryam Salehi (MS) to reflect on her own RLP using open-ended questions (Moos et al., 2008) (Fig. 2). Women were given both verbal and written information during counseling (Fig. 3). Further information was given according to the participant's RLP. If the plan was to delay childbearing, then information on contraceptive methods and preserving fertility were provided. On the other hand, if the woman wanted to become pregnant in the near future, then emphasis was placed on what she needed to do before pregnancy such as take folic acid, adopt a healthy lifestyle, control chronic disease, immunization update, and medication advice if needed. In

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